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ABSTRACT

Operation Rewrite, a program developed for use in English instruction in Quebec (Canada), is a constructive teaching-learning method for increasing students' linguistic competency in written discourse. The program provides middle and secondary school students with structured exercises to study and rewrite, using the author's exact format but with original themes. This activity forces the student to attend to the manner in which the professional writer has translated linguistic units into meaningful sequences. The procedures combine the pragmatic and semantic aspects of language with the cognitive bases for both the processing and the production of logical communication. Through trial and error, the students discover and test lexical hypotheses and perceive patterns of language as associative codes for meaning. Analysis of the results of a study that examined the program's effectiveness revealed significant development in both reading and writing proficiency, particularly with multilingual students. (FL)

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Operation Rewrite: Theory; Practice; Results

Presented to the 8th World Congress
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Introduction

The development of competency in both printed and written discourse is of educational, social, and economic importance to any area. To an area such as Montreal where 98% of the students have instruction in two languages and 59% of these students have three or more languages, mastery in the target language poses special problems. The development of competency in language communication is sometimes obscured by the normal second language learning difficulties, as well as by conflicting theories for instruction. This paper is concerned only with the development of reading competency and communicative writing under these circumstances.

In this empirical study, it was accepted that reading and writing are mutually supportive activities. It was hypothesized that student writers who model writing patterns from reading materials will develop reading competency, plus the basic patterns for writing. These patterns may then be explored and extended into both creative and expository composition.

Often student writers (hereafter called writers) appear unaware that linguistic units may transfer from reading to writing, or that basic and standard language structures remain the same, regardless of medium. At the same time, when writers do recognize that reading and writing are mutually supportive in the task of communication, these writers are able to integrate theory with practice; they are able to combine process and product in application to writing.

Operation Rewrite: Theory and Structure

To achieve this goal, the writer has need for the codes, the patterns, the rules of the writing game. The writer must be able to use as tools the standard patterns of the language. As well, the writer must be able to manipulate the lexicon for effective communication, thereby demonstrating mastery of both usage and use (1). To develop the codes, patterns and rules, the writer needs practice with the elaboration of ideas in order to understand the role of writing in communication.

The development of writing competency, like the other language competencies, appears in ordered developmental stages. First, words and word order which represent semantic-cognitive development; second, the pragmatic expression of ideas in syntactical surface structure, to be followed by comprehensible messages according to the rules of standard communication. It seems reasonable that the writer needs experience with logical interpretation not only of language signification and values but also with the cultural signs and meanings (2).

Operation Rewrite is a paraphrastic device which offers the opportunity to merge usage and use. The ___phrastic device uses the original reading material while the para--device takes another subject. The writer uses the phrastic devices of syntax and structure as the model, but changes the semantic expressions to fit the para- or new idea.

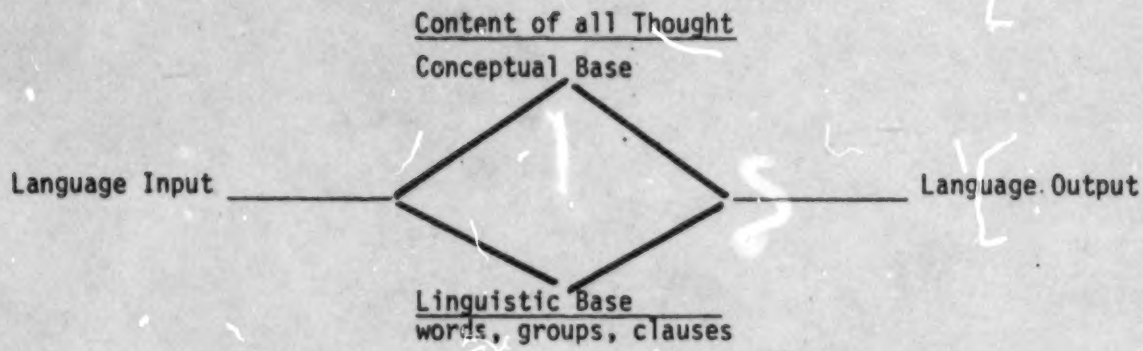
It is not the purpose of this study to discuss the psycholinguistic or conceptual theories since these have been reviewed elsewhere (3). It is pertinent to this study, however, to point out the psycholinguistic and cognitive framework upon which Operation Rewrite rests.

Linguistically, the writer begins from two levels for analysis, namely 1) the sentential analysis where words relate to each other, to groups and/or to clauses, plus 2) the conceptual level with formal relations between concepts. Both the sentential and conceptual levels of analysis exist at the same time. If one unit on one level is recognized, a unit on the second level must be recognized for meaning.

In the following sentence, "Simon is tall", the sentence has formal syntactic and semantic categories. Co-existing at the same time, conceptually, Simon is located at now in time, is contained within the sentence framework, and possesses the attribute of tall.

Three major concepts which are mandatory for any success in reading or writing are thus brought together in the one sentence: the nominal concept of those things thought of by themselves (Simon); the action concept or verb core of what the nominal does (is), and the modifier or attribute of the nominal and action (tall). These concepts not only relate to each other but are also independent. None exist without the other.

Conceptually, the writer relies upon memory structure for all possible meanings and matchings of words. The writer relates one concept to another, based upon experience and previous knowledge, and recognizes the implications and connotations of words, groups of words, and clauses. This routine search from memory mingles the conceptual and linguistic unit bases. The process might be diagrammed as follows:



When the writer searches or taps this interchange, the writer signals the long-term memory for core beliefs and previous information about the topic. At the same time, the writer recognizes recent input into the conceptual base, accepts or rejects the emotional variables, and routinely modifies the long-term memory information in order to initiate a response (4, 5, 6).

Although this research and analysis appears as a prodigious task, it is well to remember that the writer is not working in a vacuum. The writer has already developed basic concepts of syntax, semantics and meaning in the natural or oral language. This natural language has served as a gestalt to develop learning patterns in diverse classifications which are acknowledged by the biological systems and become part of the memory systems (7). In particular, the primary learning methods of discrimination, of trial and error, are long incorporated into the learning patterns. Concepts based upon these patterns and styles combine with knowledge and experience to give comprehension. As one analyst noted, "There exists a conceptual base that is interlingual, onto which linguistic structures in a given language map (graph) during the understanding process and out of which such structures are created during generation (4).

Operation Rewrite

Operation Rewrite builds upon these conceptual and linguistic bases since the set structure for modeling allows or impels the writer to attend to the model, then create a personal generation from the model. The writer uses a model reading passage and completely rewrites this passage but with another theme. The writer proceeds from the form to the content, then reverses the procedure and moves from content to form. For example:

Original: "Look, Tim," said Pinky, "a rat. A rat with a sack."

Rewrite : "See, Simon," cried Peter, "a cat. A cat in the pipe."

"See, Simon," cried Peter, "a mouse. A mouse from the cupboard."

"See, Simon," cried Peter, "a dog. A dog under the tree."

These sentences are rewrites of the linguistic patterns in the original model. The nouns, verbs, and modifiers are different but the syntactical structure remains the same. The semantic changes follow the idea. The writer discovers and tests lexical hypotheses against these ideas, while at the same time, focuses close attention to the manner in which the professional writer relates syntactical and linguistic units to meaning. The writer becomes actively involved in the pragmatic aspect of language by processing and producing reasoned and logical communication.

Operation Rewrite: Practice

Pupils in English schools in Quebec public schools served as grade 5 and 9 subjects. All pupils had exposure to English and French language instruction; in addition, 59% of these subjects have three or more languages.

Because of educational disruptions, the original numbers in Grade 9 were reduced to 33 while the original numbers in Grade 5 were reduced to 77. In the Grade 5 control group, the school disruption continued ten weeks at the close of the spring semester.

Groups were selected on the basis of teacher participation in whole-class research projects as experimental or control groups. These whole classes are grouped administratively according to reading scores from the previous year and are considered equal by administrative policy.

Materials

All materials for Operation Rewrite began with one sentence to be isomorphically produced through teacher direction in the whole class situation. With the mastery of one sentence for both usage and use, for thematic identification and utilization, teachers led students through successive stages until, over the period of ten weeks, students progressed from single sentence to a simple three-four paragraph story.

Procedures

The following schedule was followed by teachers who had been trained in workshops:

Weeks 1 and 2: one sentence isomorphic structures

Weeks 3 and 4: two and three sentence paragraphs for continuous idea

Weeks 5 to 10: larger passages but no more than 4 paragraphs at Grade 9.

Passages contained sufficient material for identification of main idea with supporting details. Teachers selected the longer passages.

Control groups continued only normal classroom instruction.

Pre and post Cloze tests were administered. Pre and post class compositions were collected.

Data Collection and Analysis

Cloze tests, pre-post, were prepared from grade level material. Scores assessed the student ability to comprehend semantic and syntactic patterns of the English language. The pre and post measures of 250 words with every fifth word deleted permitted error analysis for semantic correctness/incorrectness and syntactical correctness/incorrectness. This measure was deemed necessary in the classroom situation where the multilingual percentages are so high.

Exact replacement and filled foils were expected to indicate optimum mastery of usage and use of language. Raw scores and percentages of change are reported.

Written Paragraphs

Classroom compositions on free topics were collected pre and post. Each composition was analyzed twice, once by a trained research assistant and once by the researcher. Each composition was analyzed for usage or syntax and for use or semantic content.

Syntactical analysis remained objective, free from reference to meaning, but analyzed for correctness in sentence structure in standard English usage.

Sentences were weighted as one point for simple sentence, two points for complex sentence, three points for compound, and four points for compound-complex. The weighting was thought to reflect shifts in sentence structure as a result of writing competency.

Semantic analysis or use of language was similarly weighted: One point for main idea, two points for first generalization, three points for first elaboration, and four points for each further elaboration.

The data were expected to answer these questions:

1. What structural forms are readily retrieved and used by the multilingual writer?
2. Do the structural forms retrieved by the writer reflect cognitive formation of relationships translated into main idea/action, state/consequence or termination of idea or consequence of main idea and action together?
3. Are the syntactical errors indicated in Cloze demonstrated in written errors?

Results

The results of the study are presented in two parts: 1) Cloze comprehension for reading competency, 2) usage-use paragraphs production for writing competency.

Analysis of reading competency include percentage, means and standard deviations for correct response on six Cloze items: 1) foils or blanks left open, 2) exact replacements, 3) semantic correctness, 4) semantic incorrectness, 5) syntactic correctness, 6) syntactic incorrectness. Total raw scores for usage and use items-- 1) simple

Sentence, 2) complex sentence, 3) compound sentence, 4) compound-complex sentence are contrasted with paragraphs for 1) main idea or topic sentence, 2) generalization, 3) first elaboration, and 4) further elaborations or conclusion.

Cloze

As a measure for overall language proficiency, the Cloze test served to determine more than readability. It provided a key to student processing and production (8). Processing was indicated by the ability of the reader to grasp meaning of words, phrases and sentences at various levels, to project language in sequential messages, and to indicate the experimental information of the reader. In addition, it provided an assessment of syntactic or surface structure competency.

Table 1 presents the Cloze analysis by grade and group. Included are raw scores, percentages of change between pre and posttest administration for Grades 5 and 9, Operation Rewrite, and Grade 9 control group. Grade 5 control group is not reported since the post scores were considered invalid by the researcher. The pre-experimental scores had been equal to the experimental group. It was found at post test that many readers supplied the foils with any word in mind: and,if, so but, etc. Little attempt was made to fit words to meaning.

Table 1

Cloze: Analysis by Grade
Raw Scores; Percentage of Change
250 Words; 50 Blanks; 5th Word
Deletion; Operation Rewrite; Control

Grade	N	Blanks Open	% change	Exact	Replace-ment	%	Semantically Correct	%	Semantically Incorrect	%	Syntactically Correct	%	Syntactically Incorrect	%
5	77													
Operation Rewrite (37)														
Pre		79	72	1015	15		223	13	500	39	456	6	307	26
Post		23		1168			290		355		430		215	
Grade 9	33													
Operation Rewrite (16)														
Pre		18	55*	386	49		135	27	269	20	233	9	161	21
Post		8		405			172		215		254		133	
Control (17)														
Pre		28	67	388	7		163	27	271	9	236	2	188	4
Post		9		419			121		306		242		180	

In Table 1, the high percentage of change in number of blanks filled accurately suggests that readers increased the lexicon and became more competent in assessing the phraseology and meaning of the passage.

Of greater interest was the increase in semantically and syntactically correct usage. Only synonomic words which would fit the meaning of the passage were accepted. In some instances, the word was correct semantically but incorrect syntactically. For example:

Grade 5:

Correct Sentence: He slipped behind the bushes to think things over. He had seen baboons before, but his mother always walked in a wide circle around them. This should have been a warning to him, but suddenly he forgot the wildebeest he had planned to eat .....

Incorrect: He slipped behind some bushes to think things over. He had seen baboons before, but his mother always walked in front wide circle around them. He should have been a lion to him, but suddenly he forgot the wildebeest he had planned to eat .....

In the Grade 5 instances, readers often identified apparently with the lion. It may be that the reader thought of the mother walking in wide circles around and in front of the baboons. Certainly the fill-in destroyed any meaning to the sentence. This would simply indicate that the reader was processing and producing sentence by sentence rather than identifying theme of main idea and thus matching meaning to the sentence. Furthermore, the lion fill-in is the correct syntactical part of speech. This would indicate knowledge of syntactical patterns but immaturity in mapping syntax and semantic together for meaning.

In some instances, the reader overlooked markers within the context.

Grade 9:

Correct Sentences: At the other end of the store, Rose-Anna had stopped at the toy counter, and then picked up a little tin flute. As a salesgirl approached, however, she put it down hastily.

Incorrect: At the other end of the store, Rose-Anna stopped at the toy counter, and then picked up a little tin flute. As a salesgirl approached, her, she put it down gently.

In the Grade 9 errors, the readers overlooked the punctuation, perhaps reading clumsily; the reader did use the adverb in the correct slot, even though the word is not synonymous with hastily. Nevertheless, the meaning is clear. Gently was accepted as correct syntactically.

Table 2 and 3 indicate that in both Grades 5 and 9, readers made advances in lexicon or vocabulary whic allowed them to fill the foils with acceptable words for meaning.

Insert Tables 2 and 3 about here

In each grade, the advances were accompanied by increased competency or fewer errors in the semantically incorrect use of language. The changes should be noted in conjunction with the increase in exact replacements. It would appear that problems of semantic correctness may indicate some continued lack of word knowledge, phraseology, or idiomatic expression for particular foils. This was evident with one special idiom, "if it took all night", even "when it took all night."

When incorrectness is assessed, both boys and girls gained in competency, becoming more proficient in accurate usage of the language, as shown in Figure 1.

Insert Figure 1 about here

OPERATION REWRITE: 14

Table 2

Cloze Analysis: Operation Rewrite
Means, Standard Deviations: Grade
5; Sex; 250 Words, 5th Word Deletion

Grade	N	Blanks Open		Exact Replacement		Semantically Correct		Semantically Incorrect		Syntactically Correct		Syntactically Incorrect	
5	37	M.	S.D.	M.	S.D.	M.	S.D.	M.	S.D.	M.	S.D.	M.	S.D.
Boys	16												
Pre		3.6	4.9	25.4	8.4	6.0	3.5	14.9	7.5	12.3	2.8	9.6	5.7
Post		.8	2.1	3.1	5.3	9.2	2.2	8.8	5.2	12.6	3.1	5.3	3.4
Girls	21												
Pre		1.2	1.6	28.2	4.9	7.4	3.1	13.1	4.6	12.2	2.1	8.2	3.7
Post		.4	.9	32.5	4.2	6.7	2.8	10.1	4.7	10.8	3.2	6.1	4.1

Table 2, presents the analysis for Grade 5 by sex. Readers appear able to decode and encode the story.., a fact which appears in the mean score differences between pre and posttest. The percentage of exact replacements appears to favor the boys at 22% over the girls at 15%.

Semantic correctness improved 50% for the boys while girls, at pretest higher than the boys in comprehension, appeared to regress by 9%, thus falling behind the boys. Similar performances were noted for the semantically correct performances.

Table 3

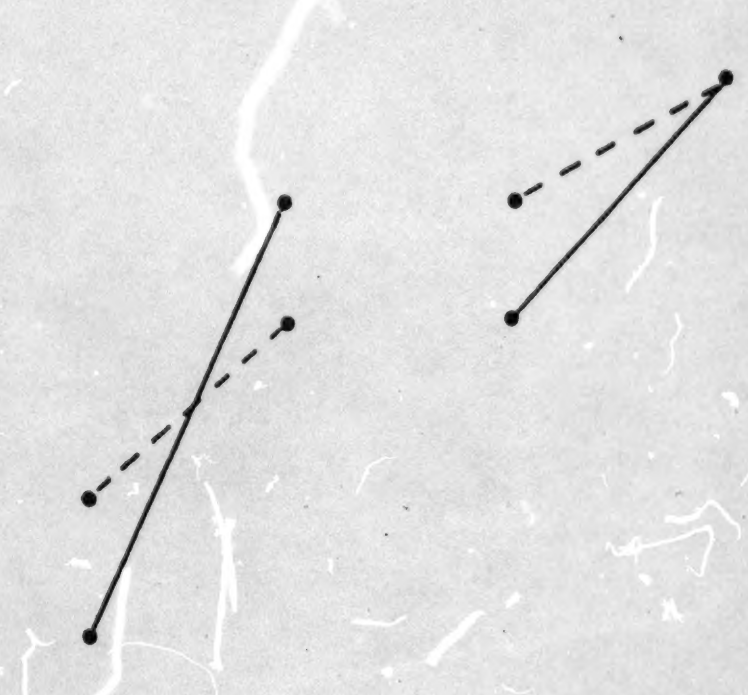
Cloze: Analysis by Grade; Sex, Method Means, Standard Deviations; 250 word Passage; Fifth Word Deletion Pattern; Blanks open, Exact Replacement; Semantically Correct, Incorrect; Syntactically Correct, Incorrect.

Grade N	Blanks Open		Exact Replace.		Semantically Correct		Semantically Incorrect		Syntactically Correct		Syntactic Incorrect	
	Mean	St.D.	M.	St.D.	M.	St.D.	M.	St.D.	M.	St.D.	M.	St.D.
9 33												
Oper. Rew.												
Boys (7)												
Pre	1.7	2.6	22.8	4.2	8.2	2.2	17.8	4.9	15.0	3.0	9.7	3.1
Post	.2	.7	24.2	2.8	9.7	3.2	15.7	4.4	15.1	4.4	10.2	3.2
Girls (9)												
Pre	.66	1.1	25.1	1.9	8.5	[illegible]	16.0	3.0	[illegible]	2.4	10.3	2.7
Post	.6	1.1	26.1	2.6	11.5	3.1	11.6	2.3	16.4	2.6	6.7	2.6
Control												
Boys (8)												
Pre	.87	1.1	21.8	2.6	7.6	3.9	19.6	5.3	[illegible]	4.2	11.7	4.3
Post	.3	.7	23.0	5.1	6.8	2.1	19.7	5.8	14.3	1.5	12.2	4.5
Girls (9)												
Pre	2.3	3.7	23.5	3.1	7.7	1.9	16.3	2.8	14.6	2.3	9.4	2.2
Post	.6	1.1	26.1	4.5	7.3	3.1	16.4	3.7	14.1	1.1	9.1	3.1

GRADE 5 (N-37)

OPERATION REWRITE: 16

MEAN SCORE	PERCENT CORRECT CONVERSION	PERCENT CORRECT SEMANTIC PRE	PERCENT CORRECT SEMANTIC POST	PERCENT CORRECT SYNTACTIC PRE	PERCENT CORRECT SYNTACTIC POST
0	100				
1	98				
2	96				
3	94				
4	92				
5	90				
6	88				
7	86				
8	84				
9	82				
10	80				
11	78				
12	76				
13	74				
14	72				
15	70				
16	68				
17	66				
18	64				
19	62				
20	60				



LEGEND. BOYS O_____O
GIRLS O------O

FIGURE 1. PERCENT SEMANTIC AND SYNTACTICALLY CORRECT SCORES ON CLOZE PRETEST AND POSTTEST, EXPERIMENTAL GROUPS, BOYS (16), GIRLS (21).

In Figure 1, the semantic and syntactic incorrect mean scores, pre and posttest, have been converted to percentages. With 250 words and 50 word deletions, one-half of the deletions at 25, given one point for each response and multiplied by 2 would be 50%, a 30 score multiplied by 2 at 60%, etc. Normally, Cloze scores range from 35-50 (9,10,11). Since this assessment of incorrect use and usage is concerned with error rate, the mean score and its percentage conversion were subtracted from 100, resulting in a readable but truncated and positive graph. The graph in Figure 1 indicates the growth, percentage-wise, between pre and post testing for Grade 5, boys and girls.

It is apparent that Grade 5 improved in its ability to use to advantage the 70% redundancy in the English language. The development of this skill is particularly interesting since this is a procedure for the better reader. Of much interest is the improvement of the boys who are often thought to be either less capable or less interested.

The dramatic improvement in use of semantics indicates that support for both semantic and pragmatic aspects of the language is particularly effective. It should be noted also that the syntactical pattern indicates retrieval of the surface structure of the language. This too needs continued support, but it would appear that Grade 5 has sufficient linguistic base in the basic codes and patterns of the language to profit from continued or additional experiential instruction in the use of the language.

This is equally true for Grade 9, as indicated in Figure 2. The difference in achievement in Grade 9 between the group using Operation Rewrite and the control group with no intervention is readily apparent in the scores. Only normal classroom procedures were undertaken for the control group.

It should be noted that girls in Grade 9 control began semantically with about the same rate of error as the Operation Rewrite group.

GRADE 9 (N-33)

MEAN SCORE	PERCENT CORRECT CONVERSION	PERCENT CORRECT SYNTACTIC		PERCENT CORRECT SEMANTIC	
		PRE	POST	PRE	POST
0	100				
1	98				
2	96				
3	94				
4	92				
5	90				
6	88				
7	86				
8	84				
9	82				
10	80				
11	78				
12	76				
13	74				
14	72				
15	70				
16	68				
17	66				
18	64				
19	62				
20	60				

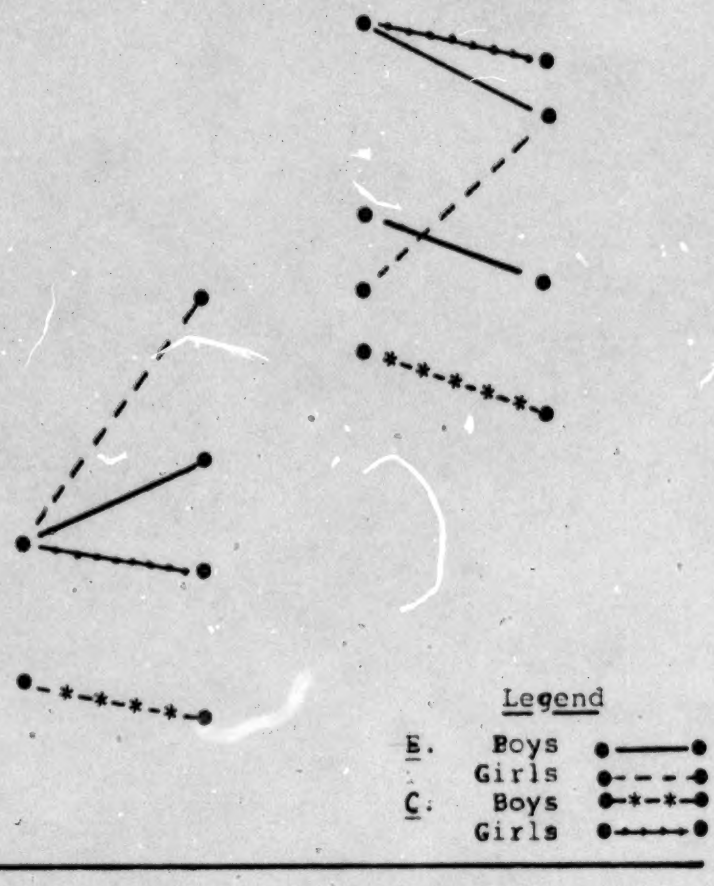


FIGURE 2. PERCENT SEMANTIC AND SYNTACTICALLY CORRECT SCORES ON CLOZE PRETEST AND POST TEST, EXPERIMENTAL GROUPS, BOYS (7), GIRLS (9), CONTROL GROUP BOYS (8), GIRLS (9).

Syntactically, girls in the control group were above the Rewrite group at pre test. The growth in semantic skill by the boys in Operation Rewrite is not as dramatic as for the girls, but it is growth slightly above the control group. The girls in both groups began at about the same level, but the girls in Operation Rewrite surpassed the others in accurate usage of language by posttest.

The subjects further demonstrated their ability to recall words from the individual lexicon, perceive the relationships between words within the context, recognize the need for particular case items, and apply these knowledges to the given passage. Their knowledge of language strategies integrates both usage and use.

Over the two data points, subjects demonstrated marked improvement in semantic acceptability. In addition their syntactic accuracy did appreciate. Altogether, subjects demonstrated that basic language codes and patterns were already developed beyond the basic skill level.

Writing Assessment

If the reader is to transfer linguistic units into productive communication, the writer must be able to use the codes for standard English. The writer must function within the system, with knowledge of the symbols, rules, and laws of the target language. The writer needs to understand the underlying relational concepts of the language... if the transmission of idea or information is to be productive and acceptable.

To that extent, Grades 5 and 9 writers were trained to isomorphically produce sentences and single paragraphs. It was expected that writers would attend to the form before attempting the expression of a different idea in the same form. It was further expected that, by integrating theory with practice, the writer would demonstrate a more mature style of writing.

Two quantitative scoring procedures were developed to measure usage and use of language in the composing of single paragraphs. To assess usage, a single sentence was scored with one point, a complex or single sentence with subordinate clause was scored with one point, a compound sentence of two single sentences combined with correct connectives was scored three points, while the compound-complex sentence which requires parallel structure of form and idea was scored four points. Run-on sentences received one point, while sentence fragments were not scored.

Use of the language was measured by scoring one point for main idea, two points for the first generalization, three points for the first elaboration, and four points for each subsequent detail or transitional sentence. Sentences which were unrelated to the main idea were not scored. Run-on sentences were scored one point for idea, but sentence fragments were not scored.

These procedures were expected to reflect maturation in syntactic and semantic usage while simultaneously indicating the pragmatic use of language. These competency results are tabulated in Table 4.

If we inspect the data in Table 4, we find a major shift from simple to complex and compound sentences for Operation Rewrite, Grades 5 and 9. The 36% increase in use of complex sentences at Grade 5 should indicate increased competency in subordination of details to main ideas.

TABLE 4

Written Language Assessment: Usage; Use
Raw and Accumulative Scores; Grades 5,9

Grade	N	USAGE: Simple Sentence (1)	Complex Sentence (2)	Compound Sentence (3)	Compound-Complex S. (4)	Total Accum.	USE: Topic Sent. (1)	Generalization (2)	First Elaboration (3)	Further Elaboration (4)	Total Accum.
5	25										
Operation Rewrite											
Pre		43	20	16	3	143	25	48	57	96	396
Post		47	33	26	2	203	25	50	54	59	523
Control	23										
Pre		58	18	19	4	225	23	21	18	19	195
Post		53	25	25	2	186	23	22	20	18	199
9	14										
Operation Rewrite											
Pre		25	16	12	9	129	14	14	13	18	153
Post		26	21	13	7	135	14	14	14	23	176
Control	15										
Pre		29	10	18	4	119	15	14	9	18	122
Post		21	11	13	2	90	15	13	6	9	77

Table 4 indicates Grade 5 increased by 62% correct usage of compound sentences, indicating increased competency in use of relationships such as sequence, consequence, and qualification. Total accumulation scores indicate that Grade 5 developed more competency in usage by 42%.

At the Grade 9 level, these writers developed skill at subordination through complex sentences by 31%. They increased use of compound sentences by only 4%, while their total accumulation scores rose by 4%. These scores are not as dramatic as those for the younger Grade 5. Yet these Grade 9 scores become more impressive when the total accumulative scores are contrasted with scores from the Control group which suffered a loss of 24%. It must be remembered that the post scores for Operation Rewrite were taken two weeks before the close of school while scores for the Control group were posted the last week of school.

When we inspect the use of the language or the writing for effect in the targer language by groups, we note that the total scores for written discourse increased by 31% at Grade 5, by 15% at Grade 9. The Grade 9 Control group, however, with no intervention beyond normal classroom procedures, sustained a 36% loss in power use of the language. The latter result is particularly interesting since the control group raw scores indicate as mature a use of the language at pre test as did the Operation Rewrite group.

It appears that Operation Rewrite as a model did demonstrate surface structure or syntax in the target language to all subjects, especially to the younger bilingual and multilingual subjects. These writers were able to integrate the concepts of things, of actions, and of attributes into a comprehensible message. In composition, the writers readily retrieved and used the basic patterns of the target language, thus answering

the first and second questions in the affirmative. The use of language reflected the ability to translate relationships and differentiate between main idea, action, and consequence.

Summary

Operation Rewrite is a constructive teaching-learning method for increasing linguistic competency in written discourse. As a training method, Operation Rewrite is a three-pronged procedure. It focuses attention upon the material; it provides a model for the codes and patterns of the target language. It focuses attention to directions and words, strategies for expression in written codes of assertive and non-assertive syntax, and to the mapping of meaning to these codes and patterns. The focus of attention is first on usage of information as an orientation to language study.

As an operant, the writer moves from form to content. The writer uses the topic sentence or main idea as a problem-solving technique, not simply a manipulation of language. The writer, through these practices of trial and error, through discrimination, and through association, practices the process of developing the whole idea from particular ways for expression to the final production of the developed idea. The idea is then communicated in a comprehensible message in the target language.

It is fair to say that mapping meaning to form helps young writers to relate language structures to communicative forms. Those who combine their conceptual abilities with linguisitic abilities should develop a modicum of success in the conceptual worlds of science and technology.

There are critics who suggest that Operation Rewrite is only imitation. If so, the young writer is learning by an age-old and successful method. Man has the urge to imitate, to mimic, to analogize. The physical model used in Operation Rewrite capitalizes upon these impulses through a schematic representation of language usage and use. Given the model of the professional writer, the young writer is subject to the varied input of language which demonstrates the usage of the language in standard forms of communication; equally, the model demonstrates its use for varied effects. In the writing procedures, there is constant information feedback to the auditory, visual and tactile systems, as well as to the interconnecting pathways of the central nervous system. The feedback simply strengthens the associative links between several stimuli.

Implications

The results from this empirical study indicate that Operation Rewrite should be continued in further research, especially for Grades 5 and above. The techniques show some promise for remediation with multilingual subjects. The research further indicates that teachers should recognize that, once basic writing patterns are developed, less reliance upon teaching of usage per se and greater reliance upon use of language in context of ideas will result in higher language achievement at all levels.

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